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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,148	02/17/2004	Alan R. Reinberg	500378.03	6085

7590 09/08/2004  
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EXAMINER

STEIN, STEPHEN J

ART UNIT PAPER NUMBER

1775

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/781,148

Applicant(s)

REINBERG, ALAN R.

Examiner

Stephen J Stein

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 66-86 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 66-86 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/17/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. In response to the election requirement, applicant points to a Preliminary Amendment filed February 17, 2004, which had cancelled all pending claims and presented new claims 66-86 drawn to a single statutory class of invention. These claims are now considered for patentability.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 66-86 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 65, 66, 68-70, 72, 77, 78, and 82-91 of copending Application No. 10/158,650. Although the conflicting claims are not identical, they are not patentably distinct from each other because base claim 65 of the '650 application includes substoichiometric tantalum oxide as a selected oxide layer which is part of the Markush group of the materials for the metal oxide layer in the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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6  
3. Claims 66-84 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 65, 66, 68-70, 72, 77, 78, and 82-91 of copending Application No. 10/158,650. Although the conflicting claims are not identical, they are not patentably distinct from each other because base claim 65 of the '650 application includes substoichiometric tantalum oxide as a selected oxide layer which is part of the Markush group of the materials for the metal oxide layer in the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Objections***

4. Claims 66-86 are objected to because of the following informalities: Claims 66-86 refer to "A composition". Since the subject matter claimed in the claims recites structural limitations (i.e. a layer), the preamble of the claims should recite "An article", which is the correct statutory subject matter for the claimed invention.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 66, 68, 70 and 74-78 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,888,208 (Maeda et al.).

Maeda teaches a ceramic substrate for printed circuits wherein a surface of the side of the printed circuit is subjected to a roughening treatment with substances containing gaseous sulfur trioxide at a temperature range of 100° – 200° C (See abstract and col. 3, lines 34-41). Maeda further teaches that the composition of the ceramic substrate may be zirconia (ZrO<sub>2</sub>), Titania (TiO<sub>2</sub>), Magnesia (MgO) and others (col. 4, lines 64-68). The reference still further teaches that a conductive plating layer of metals such copper, gold, nickel, cobalt and silver is deposited on the surface roughened (sulfur trioxide exposed) side of the ceramic substrate (col. 5, lines 6-14)

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda.

As stated above, Maeda discloses the claimed invention, but is silent on thickness of the ceramic layer.

Absent a showing of unexpected results with respect to the claimed thickness range, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the ceramic thickness (a result effective variable) through routine experimentation. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. Claim 66 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,413,061 (Kumar et al.) in view of Maeda et al.

Kumar teaches a sintered glass ceramic substrate comprising circuit patterns of highly conductive metals (See abstract). Kumar further teaches that the ceramic contains  $\text{Li}_2\text{O}_3$  and  $\text{Na}_2\text{O}_3$  (See Table I). Kumar fails to teach that the ceramic substrate is in contact with sulfur trioxide.

As stated above, Maeda teaches a ceramic substrate for printed circuits wherein a surface of the side of the printed circuit is subjected to a roughening treatment with substances containing sulfur trioxide. Maeda further teaches that by exposing the ceramic layer to sulfur trioxide the surface is roughened allowing firm adhesion between circuit patterns and the ceramic layers (col. 1, lines 1-30).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to expose the ceramic layer of the Kumar to sulfur trioxide as taught by Maeda, because it would allow for better adhesion between circuitry layers and the ceramics.

10. Claims 66, 68-70 and 74-77 and are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,195,018 (Kwon et al.) in view of Maeda et al.

Kwon teaches a high dielectric constant capacitor for DRAMS comprising a silicon substrate, a conductive base film such as tungsten (conductive metal), and a metal oxide film selected from the group consisting of Y2O3 (a rare earth metal oxide), BaO (alkaline earth metal oxide), MnO (transition metal oxide) and others. Kwon further teaches that the ceramic layers are on a base film which is on a silicon substrate and that this base film serves as an electrode (col. 2, lines 53-61 and Figure 1A). Kwon fails to teach that the ceramic layers are in contact with sulfur trioxide.

As stated above, Maeda teaches a ceramic substrate for printed circuits wherein a surface of the side of the printed circuit is subjected to a roughening treatment with substances containing sulfur trioxide in the form of a gas at a temperature range of 100° – 200° C. Maeda further teaches that by exposing the ceramic layer to sulfur trioxide the surface is roughened allowing firm adhesion between metal circuit patterns and the ceramic layers (col. 1, lines 1-30).

Art Unit: 1775

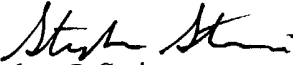
Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to expose the ceramic layers of the Kwon capacitor to sulfur trioxide because it would allow for better adhesion between circuitry layers and the ceramics.

***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Stein whose telephone number is 572-272-1544. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m. If the attempts to reach the examiner are unsuccessful, the examiner's supervisor, Deborah Jones can be reached by dialing 571-272-1535. The official fax number is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 30, 2004

  
Stephen J. Stein  
Primary Examiner  
Art Unit 1775